

THE INVENTION CLAIMED IS:

1. A method comprising:
receiving a set of data;
determining whether a free group entry of a
5 size required by a portion of the set of data exists in one
of a plurality of sections of a memory;
if a free group entry of the size required
by the portion of the set of data does not exist in one of
the plurality of sections of the memory, determining
10 whether the memory includes one or more sections of an
unallocated size; and
if the memory includes one or more sections
of an unallocated size, allocating one of the sections of
an unallocated size to the size required by the portion of
15 the set of data thereby creating a section of a dynamically
allocated size, the section of the dynamically allocated
size including one or more group entries of the size
required by the portion of the set of data.
- 20 2. The method of claim 1 wherein determining
whether a free group entry of the size required by the
portion of the set of data exists in one of a plurality of
sections of the memory includes determining whether a free
group entry of the size required by the portion of the set
25 of data for uniquely identifying each portion of the set of
data exists in one of the plurality of sections of memory.
3. The method of claim 1 wherein determining
whether the memory includes one or more sections of an
30 unallocated size includes accessing a control structure for
one or more sections of the memory, the control structure
storing information about the structure of a section.

4. The method of claim 1 further comprising,
 from the section of a dynamically allocated size,
 allocating an initial group entry of the size required by
 5 the portion of the set of data for storing the portion of
 the set of data.

5. The method of claim 4 further comprising:
 receiving a modified set of data;
 10 determining whether a portion of the
 modified set of data may be stored more efficiently in a
 group entry of a different size from another section of the
 memory such that the aggregate number of unused entries in
 the group entries used for storing the modified set of data
 15 is minimized;
 allocating a group entry of the different
 size required by the portion of the modified set of data
 from another section of the memory to store the portion of
 the modified set of data; and
 20 deallocating the initial group entry to the
 section of memory from which the initial group entry was
 allocated.

6. The method of claim 5 further comprising
 25 updating the control structure that stores information
 about the structure of the other section.

7. The method of claim 5 further comprising
 updating the control structure that stores information
 30 about the structure of the section of memory from which the
 initial group entry was allocated.

8. The method of claim 5 wherein deallocating the initial group entry to the section of memory from which the initial group entry was allocated leaves all entries of the section unused.

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9. The method of claim 8 further comprising clearing the group entry size allocation of the section.

10. The method of claim 1 further comprising, if
 10 the memory does not include one or more sections of an unallocated size, determining whether a free group entry of a size larger than the size required by the portion of the data exists, wherein sections allocated to the smallest available size larger than the size required by the portion
 15 of the data are checked prior to sections allocated to larger available sizes.

11. The method of claim 10 further comprising,
 if a free group entry of a size larger than the size
 20 required by the portion of the data exists in a section allocated to a size larger than the size required by the portion of data, allocating an initial group entry of the size larger than the size required by the portion of the set of data from the section allocated to a size larger
 25 than the size required by the portion of the data for storing the portion of the set of data.

12. The method of claim 10 further comprising,
 if a free group entry of a size larger than the size
 30 required by the portion of the data does not exist outputting an error condition.

13. The method of claim 11 further comprising:
receiving a modified set of data;
determining whether a portion of the
modified set of data may be stored more efficiently in an
5 group entry of a different size from another section of the
memory such that the aggregate number of unused entries in
the group entries used for storing the modified set of data
is minimized;
allocating a group entry of the different
10 size required by the portion of the modified set of data
from another section of the memory to store the portion of
the modified set of data; and
deallocating the initial group entry to the
section of memory from which the initial group entry was
15 allocated.

14. The method of claim 13 further comprising
updating the control structure that stores information
about the structure of the other section.

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15. The method of claim 13 further comprising
updating the control structure that stores information
about the structure of the section of memory from which the
initial group entry was allocated.

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16. The method of claim 13 wherein deallocating
the initial group entry to the section of memory from which
the initial group entry was allocated leaves all entries of
the section unused.

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17. The method of claim 16 further comprising
clearing the group entry size allocation of the section.

18. An apparatus comprising:
a memory;
a plurality of registers; and
5 dynamic allocation logic coupled to the
memory and the plurality of registers, and adapted to:
receive a set of data;
determine whether a free group entry of
a size required by a portion of the set of data exists in
10 one of a plurality of sections of the memory;
if a free group entry of the size
required by the portion of the set of data does not exist
in one of the plurality of sections of the memory,
determine whether the memory includes one or more sections
15 of an unallocated size; and
if the memory includes one or more
sections of an unallocated size, allocate one of the
sections of an unallocated size to the size required by the
portion of the set of data thereby creating a section of a
20 dynamically allocated size.

19. The apparatus of claim 18 wherein the
dynamic allocation logic is further adapted to determine
whether a free group entry of the size required by the
25 portion of the set of data for uniquely identifying each
portion of the set of data exists in one of the plurality
of sections of memory.

20. The apparatus of claim 18 wherein the
30 dynamic allocation logic is further adapted to access a
control structure for one or more sections of the memory,

the control structure storing information about the structure of a section.

21. The apparatus of claim 18 wherein the dynamic allocation logic is further adapted to, from the section of a dynamically allocated size, allocate an initial group entry of the size required by the portion of the set of data for storing the portion of the set of data.

22. The apparatus of claim 21 wherein the dynamic allocation logic is further adapted to:
 receive a modified set of data;
 determine whether a portion of the modified set of data may be stored more efficiently in a group entry of a different size from another section of the memory such that the aggregate number of unused entries in the group entries used for storing the modified set of data is minimized;

allocate a group entry of the different size required by the portion of the modified set of data from another section of the memory to store the portion of the modified set of data; and

deallocate the initial group entry to the section of memory from which the initial group entry was allocated.

23. The apparatus of claim 22 wherein the dynamic allocation logic is further adapted to update the control structure that stores information about the structure of the other section.

24. The apparatus of claim 22 wherein the dynamic allocation logic is further adapted to update the control structure that stores information about the structure of the section of memory from which the initial group entry was allocated.

25. The apparatus of claim 22 wherein the dynamic allocation logic is further adapted to deallocate the initial group entry to the section of memory from which the initial group entry was allocated leaving all entries of the section unused.

26. The apparatus of claim 25 wherein the dynamic allocation logic is further adapted to clear the group entry size allocation of the section.

27. The apparatus of claim 18 wherein the dynamic allocation logic is further adapted to, if the memory does not include one or more sections of an unallocated size, determine whether a free group entry of a size larger than the size required by the portion of the data exists, wherein sections allocated to the smallest available size larger than the size required by the portion of the data are checked prior to sections allocated to larger available sizes.

28. The apparatus of claim 27 wherein the dynamic allocation logic is further adapted to, if a free entry group of a size larger than the size required by the portion of the data exists in a section allocated to a size larger than the size required by the portion of data, allocate an initial group entry of the size larger than the

size required by the portion of the set of data from the section allocated to a size larger than the size required by the portion of the data for storing the portion of the set of data.

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29. The apparatus of claim 27 wherein the dynamic allocation logic is further adapted to, if a free group entry of a size larger than the size required by the portion of the data does not exist, output an error condition.

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30. The apparatus of claim 23 wherein the dynamic allocation logic is further adapted to:

receive a modified set of data;

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determine whether a portion of the modified set of data may be stored more efficiently in a group entry of a different size from another section of the memory such that the aggregate number of unused entries in the group entries used for storing the modified set of data is

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minimized;

allocate a group entry of the different size required by the portion of the modified set of data from another section of the memory to store the portion of the modified set of data; and

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deallocate the initial group entry to the section of memory from which the initial group entry was allocated.

31. The apparatus of claim 30 wherein the dynamic allocation logic is further adapted to update the control structure that stores information about the structure of the other section.

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32. The apparatus of claim 30 wherein the dynamic allocation logic is further adapted to update the control structure that stores information about the structure of the section of memory from which the initial group entry was allocated.

33. The apparatus of claim 30 wherein the dynamic allocation logic is further adapted to deallocate the initial group entry to the section of memory from which the initial group entry was allocated leaving all entries of the section unused.

34. The apparatus of claim 33 wherein the dynamic allocation logic is further adapted to clear the group entry size allocation of the section.